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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of: **Noriko SAKASHITA et al.**

Art Unit: **1713**

Application Number: **10/730,887**

Examiner: **Dr. Kelechi C. Egwim**

Filed: **December 10, 2003**

Confirmation Number: **5155**

For: **PROCESSING AID FOR VINYL CHLORIDE RESIN AND VINYL
CHLORIDE RESIN COMPOSITION**

Attorney Docket Number: **000466A**

Customer Number: **38834**

SUBMISSION OF APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

April 4, 2008

Sir:

Applicants submit herewith an Appeal Brief in the above-identified U.S. patent application.

Attached please find a check in the amount of \$510.00 to cover the cost for the Appeal Brief. If any additional fees are due in connection with this submission, please charge Deposit Account No. 50-2866.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPEAL BRIEF FOR APPELLANT

Ex parte Noriko SAKASHITA et al. (Appellant)

PROCESSING AID FOR VINYL CHLORIDE RESIN AND VINYL CHLORIDE RESIN
COMPOSITION

Application Number: 10/730,887

Filed: December 10, 2003

Appeal No.: _____

Art Unit: 1713

Examiner: Dr. Kelechi C. Egwim

Submitted by:
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Attorney Docket No. 000466A

Appeal Brief
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(I) REAL PARTY IN INTEREST

The real party in interest is KANEKA CORPORATION, by an assignment recorded in the U. S. Patent and Trademark Office on April 26, 2000, at Reel 010834, Frame 0683, in Parent Application 09/530,202, filed April 26, 2000.

(II) RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to appellant, appellant's legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Application No. 10/730,887
Attorney Docket No. 000466A

Appeal Brief
Appeal Brief filed April 4, 2008

(III) STATUS OF CLAIMS

Claims 1-4 are pending, and are rejected.

(IV) STATUS OF AMENDMENTS

This Appeal is filed following submission of a Response in response to a Final Office Action issued October 9, 2007. The Response was filed on December 28, 2007, and followed an Amendment filed on July 12, 2007. The Examiner forwarded an Advisory Action dated January 14, 2008.

(V) SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 and dependent claims 2-4 are grouped with and stand and fall with the independently claimed subject matter of claim 1, which is characterized by:

A processing aid for a vinyl chloride resin; the processing aid having a specific viscosity η_{sp} of 0.6-1.6, an average particle diameter of 1500-3000 Å and being obtained by polymerizing

1 to 50 parts by weight of a monomer mixture (B) comprising 0 to 49% by weight of methyl methacrylate,

51 to 100% by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and

0 to 20 % by weight of a vinyl monomer copolymerizable therewith,
in the presence of a latex of a (co)polymer having specific viscosity of at least η_{sp} 0.7.

The latex (co)polymer is previously obtained by polymerizing in emulsion 99 to 50 parts by weight of a monomer mixture (A) comprising

51 to 100% by weight of methyl methacrylate,

0 to 49 % by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and

0 to 20 % by weight of a vinyl monomer copolymerizable therewith,

The total amount of (A) and (B) is 100 parts by weight.

The specific viscosity is measured at 30°C using Ubbelohde's Viscometer on 0.1 g of polymer dissolved in 100 mL chloroform, which is different from measuring in other solvents, such as benzene.

The invention is described in the specification in the following locations, as indicated by the following Table:

Claim	Specification Locations
1. (Previously Presented) A processing aid for a vinyl chloride resin; the processing aid having a specific viscosity η_{sp} of 0.6-1.6, an average particle diameter of 1500-3000 Å	Page 12, line 12 Page 12, line 16 Page 12, lines 6-8; Table 1, Examples 1-4
and being obtained by polymerizing	
1 to 50 parts by weight of a monomer mixture (B) comprising	Page 9, line 25
0 to 49% by weight of methyl methacrylate,	Page 8, line 11; page 8, line 26
51 to 100% by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and	Page 7, line 8; page 9, line 1
0 to 20% by weight of a vinyl monomer copolymerizable therewith,	Page 8, line 17
in the presence of a latex of a (co)polymer having specific viscosity of at least η_{sp} 0.7, which is obtained by polymerizing in emulsion	Page 8, line 3
99 to 50 parts by weight of a monomer mixture (A) comprising	Page 9, line 23; page 10, line 2
51 to 100% by weight of methyl methacrylate,	Page 6, line 27; page 7, line 8
0 to 49% by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and	Page 7, line 2 Page 7, line 10
0 to 20% by weight of a vinyl monomer copolymerizable therewith,	Page 7, line 5; page 7, line 13; page 7, line 25
the total amount of (A) and (B) being 100 parts by weight,	Page 9, line 27
and the specific viscosities being measured at 30°C using Ubbelohde's Viscometer on 0.1 g of polymer dissolved in 100 mL chloroform.	Page 15, line 23

(VI) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-4 are rejected under 35 U.S.C. §102(b) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) over Tuzuki et al. (US 4,179,481) or GB 1378434.

Appellant notes that the disclosures of Tuzuki et al. (US 4,179,481) and GB 1378434 are substantially identical. The Inventors are the same, and both Tuzuki et al. and GB 1378434 are assigned to the same entity as is the present application. Therefore, Appellant submits that patentably distinguishing from one reference necessarily distinguishes from the other reference.

(VII) ARGUMENT

Appellant respectfully disagrees with rejections under either §§102 or 103.

- Appellant submits that the rejection under §102 is not appropriate because Tuzuki et al. and GB 1378434 fail to disclose each and every claimed limitation.
- Appellant respectfully submits that the rejection under §103 is overcome by appropriate showing of unexpectedly superior results.

THE EXAMINER FAILS TO SHOW THAT TUZUKI ET AL. / GB 1378434 TEACH EACH AND EVERY LIMITATION

The Examiner Fails to Show that Tuzuki et al. / GB 1378434 Teach the Limitation with Respect to the Narrowly Claimed Second Stage Specific Viscosity

Claims 1-4 are rejected under 35 U.S.C. §102(b) as being anticipated by Tuzuki et al. (US 4,179,481) or GB 1378434.¹

Appellant initially notes that the disclosures of Tuzuki et al. (US 4,179,481) and GB 1378434 are substantially identical. Therefore, Appellant submits that patentably distinguishing from one reference necessarily distinguishes from the other reference.

Appellant claims a second stage (final stage) compound having a specific viscosity η_{sp} of 0.6-1.6, (measured in chloroform) prepared from a first stage compound having a specific viscosity of at least η_{sp} 0.7 (measured in chloroform). Furthermore, the claimed particles of the second stage compound have an average particle diameter of 1500-3000 Å. It is the claimed specific viscosity of the first stage compound and the average particle diameter of the second stage compound that are not met by the cited Tuzuki et al. / GB 1378434.

Appellant notes that the prior art discloses specific viscosity as measured in benzene, rather than chloroform, and in different dilution ratios. In order to facilitate conversion between

¹ Appellant initially notes that the disclosures of Tuzuki et al. (US 4,179,481) and GB 1378434 are substantially identical. Therefore, Appellant submits that patentably distinguishing from one reference necessarily distinguishes from the other reference. Appellant will throughout this paper refer to “Tuzuki et al. / GB 1378434”.

the two methods of measuring, Appellant has submitted a Declaration dated March 19, 2002, which shows a conversion table and a conversion equation of:

$$\text{Specific viscosity (0.1\% chloroform, 30°C)} = 0.116 \times \text{specific viscosity (0.4\% benzene, 30°C)} + 0.18.$$

In the Office Action dated October 9, 2007, the Examiner asserts that Tuzuki et al. (and presumably GB 1378434) teach the advantage of having a second stage polymer with specific viscosities of “at least ... 0.24 in chloroform.” Appellant agrees that such range (0.24 to infinity) of specific viscosity of the second stage polymer encompasses the claimed second stage specific viscosity of 0.6-1.6.

However, Tuzuki et al. / GB 1378434 fail to teach the claimed first stage specific viscosity, fail to teach with sufficient specificity the exact second stage specific viscosity of 0.6-1.6, and further fail to teach the claimed second stage average particle diameter of 1500-3000 Å.

With respect to the first stage viscosity, the Examiner maintains that, although the cited prior art do not teach the specific viscosity of the first stage, it is “reasonable that the viscosity of the first stage of the prior art would possess the claimed specific viscosities given that the composition of the polymers are “essentially the same” as in the claimed invention.

Such statement by the Examiner necessarily ignores the original specification and the previous argument and declaration presented by Appellant that show that the specific viscosity of the second stage compounds is not inherently determined by the specific viscosity of the first stage compound, and the specific viscosity of the first stage can not be determined merely by noting the specific viscosity of the second stage polymer.

Appellant notes that the specification shows Comparative Example 9, which exhibits a first stage polymer specific viscosity that meets the claimed range, but the second stage polymer specific viscosity is lower than that claimed, and the lower second stage viscosity results in an unacceptable foamability. Further, Comparative Example 10 exhibits a second stage polymer specific viscosity that meets the claimed range, but the first stage polymer specific viscosity of Comparative Example 10 is lower than claimed.

In the Declaration dated March 6, 2003, Appellant showed that even though a product met the claimed second stage second stage specific viscosity, it was formed from first stage polymers composition that fell outside the claimed first stage specific viscosity.

Appellant submits that it has been demonstrated that a specific viscosity of compound may meet either of the first or second stage specific viscosities without meeting the value of the other viscosity.

With respect to the claimed specific viscosity of the second stage product, Appellant amended the claims on July 12, 2007 to recite that the compound having a second stage specific viscosity η_{sp} of 0.6-1.6 was obtained by polymerizing in the presence of a latex of a (co)polymer having first stage specific viscosity of at least η_{sp} 0.7. Such reduction of the claimed second stage specific viscosity was intended to render previously submitted evidence of unexpected results as commensurate with the claimed range, since the claimed range was reduced to recite only the range supported by the experimental data.

However, the Examiner still rejects the claims as if the above amendment were not made. In the Office Action dated October 9, 2007, the Examiner cites Tuzuki et al. merely as showing a second stage specific viscosity of “at least 0.24”, presumably concluding that such range of “at least 0.24” is sufficient to anticipate the claimed 0.6-1.6, and the Examiner does not recognize the narrow range to which Appellant amended the second stage specific viscosity.

With respect to the rejection under §102, Appellant refers to MPEP §2131.03, which states that when the prior art discloses a range that overlaps the claimed range, but no specific examples falling within the claimed range are disclosed, a case-by-case determination must be made as to anticipation. The MPEP then indicates that if the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with “sufficient specificity” to constitute anticipation of the claims.

Because Tuzuki et al. / GB 1378434 discloses a range that overlaps² the claimed range, but no specific examples falling within the claimed range are disclosed, Appellant submits that a case-by-case determination must be made as to anticipation.

² The Examiner has previously asserted that a range that is fully within a disclosed range does not “overlap” the disclosed range in the meaning of MPEP §2131.03. However, the text of MPEP §2131.03 cites *Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 999, 78 USPQ2d 1417, 1423 (Fed. Cir. 2006) wherein a reference temperature range of 100-500 °C did not describe the claimed range of 330-450 °C with sufficient specificity. If the Examiner is correct with respect to his assertion with regard to the definition of the word “overlap”, then the above Federal Circuit decision is either incorrectly decided or incorrectly cited by MPEP §2131.03.

With respect to none of the samples of Tuzuki et al. / GB 1378434 teaching a second stage polymer having a specific viscosity of 0.6-1.6, Appellant notes Examples 1 and 3-6 of Tuzuki et al. / GB 1378434, which are comprised of Samples 1-20 of Tuzuki et al. / GB 1378434.

All of the samples disclosed in Tuzuki et al. / GB 1378434 have specific viscosities of the second stage polymer that are outside the claimed range. In Example 1 (Sample number (1)) of Tuzuki et al. / GB 1378434, the obtained final polymer has a specific viscosity of 1.60 in benzene, which corresponds to 0.36 in chloroform. Polymers in Example 3 (sample polymers (5) to (12)) are prepared according to the same process in Example 1. Also, as described in lines 24 to 25, col. 11, polymers in Example 4 (sample polymers (13) to (19)) are prepared according to the same process in Example 1. Further, in Example 6 of Tuzuki, the obtained second stage polymer has a specific viscosity of 1.65 in benzene, which corresponds to 0.37 in chloroform. The sample polymers disclosed in Table 7 and 8 are prepared according to the same process in Example 6, and would be expected to exhibit the same second stage specific viscosity.

Therefore, all of the exemplary samples disclosed in Tuzuki et al. / GB 1378434 have specific viscosities of the second stage polymer that are outside the claimed range.

Because of the limited specific viscosity teachings of the cited Tuzuki et al. / GB 1378434, and the fact that Tuzuki et al. / GB 1378434 fails to teach any examples in the claimed range of second stage specific viscosity, and Appellant's demonstration of unexpected results in

the claimed range, Appellant submits that the claimed range is not disclosed with sufficient specificity in Tuzuki et al. / GB 1378434 to anticipate the claims.

The Rejection Fails to Show that Tuzuki et al. / GB 1378434 Teach the Claimed Average Particle Size

With respect to the claimed average particle size, the Examiner asserts that particle sizes of the second stage product would have been “inherent or at least obvious in view of the teachings of Tuzuki et al.” Therefore, the rejection is essentially an inherency argument, asserting that because the types and relative amounts of the basic components of the respective inventions are similar, the resulting viscosities and particle sizes will necessarily be the same.

In Tuzuki et al. / GB 1378434, Example 1, 0.1 parts by weight of ammonium persulfate was used as a polymerization initiator; and although the average particle size after the second stage polymerization is not clarified, it is described that the average particle sizes of the comparative sample (2) and the latex (3) are “about 1000 Å, respectively”.

The Examiner discounts the above as merely a single example, to which Tuzuki et al. / GB 1378434 is not limited. However, the Example represents the only teaching of average particle size in the reference. There is no teaching that the average particle size could or should be in the claimed range of 1500-3000 Å.

The reason why the particle size of the first stage particles are intended to increase up to 1500 to 3000 Å, although the particle size of the first stage particles are disclosed as 1000 Å in the cited reference lies in that in a case where latex having such particle size of the first stage

particles as above is formulated into powder, agglomeration force is lowered to reduce a particle size of the powder because a contact area among the latex particles becomes lower as compared with the powder obtained by using the latex having the particle size of the first stage particles disclosed in the cited reference. Small particle size of the powder can give molded articles having excellent qualities, and thus, it is necessary and required to set forth the particle size of the first stage particle as 1500 to 3000 Å as in the claim 1 of the present application.

The Examiner's assertion that a particle size is adjusted by a specific viscosity and constituents in a composition is not correct. A particle size can be adjusted and controlled independently mainly by the amount of emulsifier and separately from a specific viscosity and constituents in a composition. The Examiner's assertion that a particle size is dependent upon a polymerization degree of a polyvinyl chloride resin is also not correct.

From the above, Appellant submits that there is found no disclosure nor suggestion in Tuzuki et al. about being preferable to adjust the specific viscosity after the second stage polymerization to 0.6-1.6 when the average particle size at the first stage is set forth as the claimed 1500-3000 Å, which is one of the characteristics of the present claims, nor is it preferable to conduct the second stage polymerization of the latex of which specific viscosity at the first stage is adjusted to 0.7 or more.

**THE REJECTION UNDER §103 IS REBUTTED BECAUSE UNEXPECTEDLY
SUPERIOR RESULTS HAVE BEEN ESTABLISHED BETWEEN THE
SPECIFICATION AND THE DECLARATIONS**

Claims 1-4 are alternatively rejected under 35 U.S.C. §103(a) over Tuzuki et al. (US 4,179,481) or GB 1378434.

Appellant submits that the rejection under §103 is rebutted because unexpectedly superior results are established between the original specification and the Declarations.

The Examiner admits in the Office Action dated October 9, 2007, that the criticality of the claimed first and second stage specific viscosities are not in question.

The Examiner asserts that it would have been obvious to use each of the claimed specific viscosities, and asserts that Appellant has not rebutted the obviousness rejection because Appellant has not shown unexpected result compared with the cited Tuzuki et al. / GB 1378434 that teach viscosities “greater than or equal to 0.24” as the cited Tuzuki et al. / GB 1378434 does with respect to the requirement that the final specific viscosity of the prior art products.

Appellant notes that in the cited Tuzuki et al. / GB 1378434, one or both of specific viscosities of first stage polymer and second stage polymer is lower than the claimed specific viscosities of the present invention. This statement has not been contradicted by the Examiner.

Appellant has claimed that the present specification and the Inventor’s Declaration combine to show that the product of the claimed invention is unexpectedly superior with respect to the properties of transparency, gelation and foamability than that which would have arguably been suggested by the cited Tuzuki et al. / GB 1378434.

Appellant submits that the specification shows the undesirable result of low specific viscosity outside the claimed range, and the superior results associated with compounds exhibiting the claimed ranges of specific viscosities. Comparative Example 9 exhibits a first stage polymer specific viscosity that meets the claimed range, but the second stage polymer specific viscosity is lower than that claimed, and the lower second stage viscosity results in an unacceptable foamability. Further, although Comparative Example 10 exhibits a second stage polymer specific viscosity that meets the claimed range, the first stage polymer specific viscosity of Comparative Example 10 that is lower than claimed, and this results in unexpectedly poorer gelation and foamability properties versus that of Examples 17-20, which have the claimed first and second (final) specific viscosities.

Furthermore, Appellant has presented an Inventor's Declaration dated March 6, 2003 that further illustrated that the processing aid of the present invention has properties unexpectedly superior than the cited Tuzuki et al. / GB 1378434. As noted in the Declaration, the first stage polymer obtained in Comparative Example 9 of the present invention, the first stage polymer and the second stage polymer obtained in Comparative Example 10 and the first stage polymer obtained by EXPERIMENT in the Declaration have lower specific viscosity than the claimed specific viscosity of the present invention. It is shown that when these polymers are used as processing aids for poly (vinyl chloride), satisfactory transparency, gelation property and foamability are not obtained. Accordingly, it is shown that satisfactory transparency, gelation property and foamability can **not** be obtained when at least one of specific viscosity of the first

stage polymer and the second stage polymer is lower than the claimed specific viscosity of the present invention. This result, in light of the teachings of the prior art, is unexpectedly superior.

Appellant further submitted a Declaration dated June 29, 2007, which included further evidence of unexpected results associated with compounds exhibiting the claimed first stage and second stage specific viscosities. Eight samples are submitted to support Appellant's assertion of unexpectedly superior results.

In the Declaration, Table 1 and Figure 2 show foamabilities of the samples wherein the second stage specific viscosity was in the claimed range around 0.6 and the first stage specific viscosity was varied from 0.54 to 0.86. Table 2 and Figure 2 show foamabilities of the samples wherein the second stage specific viscosity was in the claimed range around 0.7 and the first stage specific viscosity was varied from 0.31 to 0.81.

It can be seen from the Table 1 and Figure 1 that even when the second stage specific viscosity is in the claimed range, a first stage specific viscosity outside the claimed range provides graphically poorer results with respect to foamability.

It can be seen from the Table 2 and Figure 2 that even when the first stage specific viscosity is in the claimed range, a second stage specific viscosity outside the claimed range provides graphically poorer results with respect to foamability.

(VIII) CONCLUSION

Appellant submits that the rejection of the present claims under §102(b) for anticipation is not appropriate, and submits that the rejection of the present claims under §103(a) for obviousness has been overcome by appropriate showing of unexpected results. Appellant respectfully solicits reversal of the rejections under 35 U.S.C. §§102 and 103.

If this paper is not timely filed, Appellant hereby petitions for an appropriate extension of time. The fee for any such extension may be charged to Deposit Account No. 50-2866, along with any other additional fees that may be required with respect to this paper.

Respectfully submitted,

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(IX) CLAIMS APPENDIX

1. (Previously Presented) A processing aid for a vinyl chloride resin; the processing aid having a specific viscosity η_{sp} of 0.6-1.6, an average particle diameter of 1500-3000 Å and being obtained by polymerizing

1 to 50 parts by weight of a monomer mixture (B) comprising 0 to 49% by weight of methyl methacrylate,

51 to 100% by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and

0 to 20 % by weight of a vinyl monomer copolymerizable therewith,

in the presence of a latex of a (co)polymer having specific viscosity of at least η_{sp} 0.7, which is obtained by polymerizing in emulsion 99 to 50 parts by weight of a monomer mixture (A) comprising

51 to 100% by weight of methyl methacrylate,

0 to 49 % by weight of at least one monomer selected from the group consisting of a methacrylate ester except methyl methacrylate and an acrylate ester, and

0 to 20 % by weight of a vinyl monomer copolymerizable therewith,

the total amount of (A) and (B) being 100 parts by weight,

and the specific viscosities being measured at 30°C using Ubbelohde's Viscometer on 0.1 g of polymer dissolved in 100 mL chloroform.

2. (Original) The processing aid of Claim 1, wherein the processing aid for a vinyl chloride resin is a processing aid for a vinyl chloride resin containing a foaming agent.

3. (Original) A vinyl chloride resin composition comprising 100 parts by weight of a vinyl chloride resin and 0.1 to 30 parts by weight of the processing aid of Claim 1.

4. (Original) A vinyl chloride resin composition containing a foaming agent comprising 100 parts by weight of a vinyl chloride resin, 0.1 to 30 parts by weight of the processing aid of Claim 1 and a foaming agent.

5. (Canceled)

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(X) EVIDENCE APPENDIX

Inventor's Declaration under 37 C.F.R. §1.132 dated March 19, 2002.
Inventor's Declaration under 37 C.F.R. §1.132 dated March 6, 2003.
Inventor's Declaration under 37 C.F.R. §1.132 dated June 29, 2007.

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(XI) RELATED PROCEEDINGS APPENDIX

n/a